

We claim:

1. A method for modulating the growth state of lung tissue, or cells derived therefrom, comprising ectopically contacting the tissue with an amount of an agent effective to
5 alter the rate of proliferation of the lung tissue, wherein the agent is selected from the group consisting of a *hedgehog* therapeutic, a *ptc* therapeutic and an *fgf-10* therapeutic.
2. A method for inducing the formation of, or the maintenance or functiona performance of lung tissue, comprising contacting the lung tissue with an amount of an agent effective to induce the formation of new lung tissue, wherein the agent is selected from
10 the group consisting of a *hedgehog* therapeutic, a *ptc* therapeutic and an *fgf-10* therapeutic.
3. The method of claim 1, wherein the lung tissue is in culture, and the agent is provided as a cell culture additive.
4. The method of claim 1, wherein the cell is treated in an animal and the agent is
15 administered to the animal as a therapeutic composition.
5. The method of claim 1, wherein the agent is a *hedgehog* therapeutic.
6. The method of claim 5, wherein the *hedgehog* therapeutic is a polypeptide including a *hedgehog* polypeptide sequence of at least a bioactive extracellular portion of a *hedgehog* protein.
- 20 7. The method of claim 6, wherein the polypeptide includes at least 50 amino acids residues of an N-terminal half of the *hedgehog* protein
8. The method of claim 6, wherein the polypeptide includes at least 100 amino acids of an extracellular domain of the *hedgehog* protein.
9. The method of claim 6, wherein the polypeptide includes at least a portion of the
25 *hedgehog* protein corresponding to a 19kd fragment of an extracellular domain of the *hedgehog* protein.
10. The method of claim 6, wherein the *hedgehog* protein is encoded by a gene of a vertebrate organism.

11. The method of claim 6, wherein the polypeptide includes a *hedgehog* polypeptide sequence represented in the general formula of SEQ ID No. 21.
12. The method of claim 6, wherein the polypeptide includes a *hedgehog* polypeptide sequence represented in the general formula of SEQ ID No. 22.
- 5 13. The method of claim 6, wherein the *hedgehog* protein is encoded by a human *hedgehog* gene.
14. The method of claim 6, wherein the *hedgehog* polypeptide sequence is at least 60 percent identical to an amino acid sequence of a *hedgehog* protein selected from the group consisting of SEQ ID No:9, SEQ ID No:10, SEQ ID No:11, SEQ ID No:12, SEQ ID No:13, SEQ ID No:14, SEQ ID No:15 and SEQ ID No:16.
- 10 15. The method of claim 6, wherein the *hedgehog* polypeptide sequence is encodable by a nucleotide sequence which hybridizes under stringent conditions to a sequence selected from the group consisting of SEQ ID No:1, SEQ ID No:2, SEQ ID No:3, SEQ ID No:4, SEQ ID No:5, SEQ ID No:6, SEQ ID No:7 and SEQ ID No:8.
- 15 16. The method of claim 6, wherein the *hedgehog* polypeptide sequence is an amino acid sequence of a *hedgehog* protein selected from the group consisting of SEQ ID No:9, SEQ ID No:10, SEQ ID No:11, SEQ ID No:12, SEQ ID No:13, SEQ ID No:14, SEQ ID No:15 and SEQ ID No:16.
17. The method of claim 6, wherein the *hedgehog* polypeptide sequence is an amino acid sequence of a Sonic *hedgehog* protein.
- 20 18. The method of claim 1, wherein the agent is a *ptc* therapeutic.
19. The method of claim 18, wherein the *ptc* therapeutic is a small organic molecule which binds to a *patched* protein and derepresses *patched*-mediated inhibition of mitosis.
20. The method of claims 18, wherein the *ptc* therapeutic binds to *patched* and mimics *hedgehog*-mediated *patched* signal transduction.
- 25 21. The method of claim 20, wherein the *ptc* therapeutic is a small organic molecule.